

A NEW SPECIES OF FUNNEL-WEB SPIDER (*HADRONYCHE*: HEXATHELIDAE:
MYGALOMORPHAE) FROM NORTH QUEENSLAND

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Hadronyche anzses sp. nov. is described from high altitude rainforest on the Carbine Tableland near Mossman, northeast Queensland. This extends the known range of funnel-web spiders northwards by 1,050km. □ *Mygalomorphae*, *Hexathelidae*. *Hadronyche*, *envenomation*, *phenology*, *biodiversity*, *biogeography*, *Australia*.

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The highly venomous funnel-web spiders of Australia belong to *Atrax* O.P. Cambridge, 1877 and *Hadronyche* Koch, 1873, included by Gray (1986, unpubl.) in the subfamily Atracinae within the Hexathelidae. The group occurs in coastal and montane forests through southeastern Australia. Popular misconception has been that many large, black, ground-dwelling spiders to the west of the Great Dividing Range were funnel-webs. Thus the discovery of a new species of funnel-web in north Queensland may not seem exciting. The misconception presumably began with the description of a funnel-web, *Anepsiada ventricosa* Rainbow & Pulleine, 1918, putatively from Clermont, central Queensland. However research on Rainbow's original notes (Gray, 1981, 1984) revealed that a transcription error has resulted in the funnel-web, actually from Mt Tamborine, in southeastern Queensland, being attributed the Clermont locality data. More intensive collecting over the past 70-80 years has shown quite conclusively that neither *Atrax* nor a close relative are native to western Queensland. Indeed, spiders often mistaken for funnel-webs in this area are presumably either *Aname* (Nemesiidae), *Idiommatu* (Barychelidae) or *Missulena* (Actinopodidae), all being black spiders, quick to take on a defensive (=aggressive) pose.

Previously, the most northerly known record of either *Hadronyche* or a close relative was west of Gladstone at Kroombit Tops (Gray, 1984, 1986, 1987, 1988; Queensland Museum records). The distribution of the Atracinae – coastal and montane areas south of Gladstone to Victoria and eastern Tasmania and in two southern areas of South Australia – agreed with that of other Australian Hexathelidae (Raven, 1978). As such, the hypothesis that the group has austral origins seemed secure. Nevertheless, this record of a new

species from relatively inaccessible, mountain rainforests over one day's march through rugged terrain west of Mossman (1,000km north of Gladstone), in the Wet Tropics of northern Queensland is authentic and may challenge such a notion.

Family HEXATHELIDAE Simon

Hadronyche L. Koch, 1873

Hadronyche L. Koch, 1873: 463. Type species by original designation and monotypy, *Hadronyche cerberaea* Koch, 1873.

DIAGNOSIS (from Raven, 1980). Three claws; numerous cuspules densely clustered on labium and maxillae; serrula present; labium large, almost square; posterior sternal sigilla large; 4 spinnerets, posterior laterals with digitiform apical segment. Plesiomorphically, with a row of teeth on both cheliceral margins. Patella and tibia of male palp enlarged.

REMARKS. A further unusual character is added to the diagnosis. In most male mygalomorphs, the diameter of the palpal patella is less than that of the femur. In *Hadronyche*, the patella is noticeably thicker than the femur and this greater diameter is maintained in the tibia. In other hexathelids, the palpal patella is as large as the femur or smaller. The enlarged patella and tibia are hence regarded as a further synapomorphy of *Hadronyche* species.

DISTRIBUTION AND HABITAT. *Hadronyche* is found through forests along the coast south of 24° (Fig. 4) with one outlier west of Mossman at 16°. Most such forests are found above 500m in altitude.

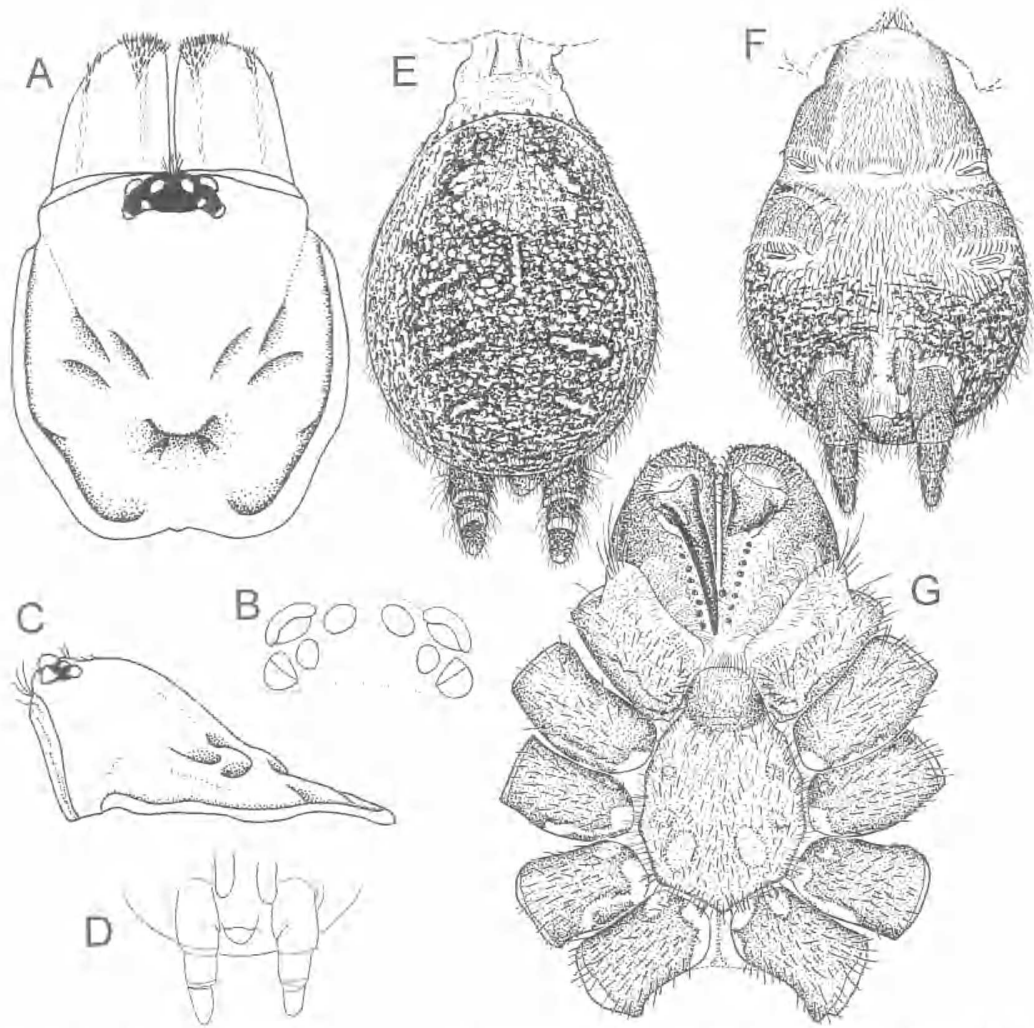


FIG. 1. *Hadronyche anzses* sp. nov., holotype ♂. A, carapace, eyes, chelicerae, dorsal view; B, eyes, dorsal view; C, carapace, lateral view; D, spinnerets, ventral view; E, abdomen and spinnerets, dorsal view; F, abdomen and spinnerets, ventral view; G, sternum, maxillae, labium, chelicerae (showing fang groove), and coxae. Scale line = 2mm for A, C-F, 1mm for B, G.

***Hadronyche anzses* sp. nov.**
(Figs 1-4)

ETYMOLOGY. From the acronym for the Australian New Zealand Scientific Exploration Society which assisted the fieldwork.

MATERIAL. HOLOTYPE: QMS18825, ♂, Mossman Bluff summit, 10km W Mossman, 16°26'54"S 145°16'53"E, NEQ, 20 Dec 1989-15 Jan 1990, G. Monteith, G. Thompson, and ANZSES Expedition, Site 10, 1300m, pitfall, rainforest. PARATYPES: QMS18826,

♂, same data but site 9, 1260m, 16°27'23"S 145°16'59"; QMS18859, ♂, Devils Thumb to Pauls Luck, 12km WNW Mossman, 16°25'09"S 145°15'29"E, NEQ, 29 Dec 1989-15 Jan 1990, ANZSES Expedition, site 15, 1220m, pitfall trap, rainforest.

DIAGNOSIS. Differs from all other named species of *Hadronyche* in having teeth for full length of retromargin but only three teeth on the usually heavily dentate promargin; males with less spinose tibiae and metatarsi I, and lacking spines on distal palpal femora. Females unknown.

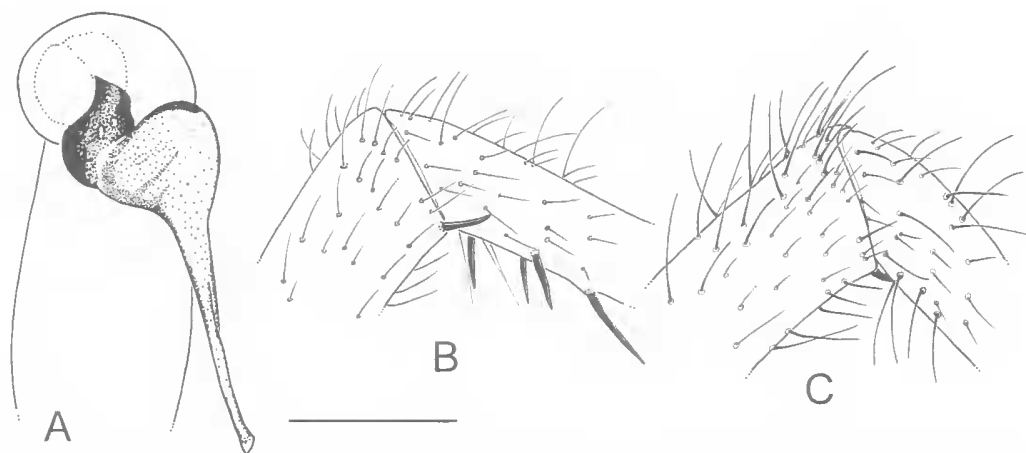


FIG. 2. *Hadronyche anzses* sp. nov., holotype ♂. A, palpal tibia, cymbium, and bulb, ventral view; B, tibia and metatarsus I, prolateral view; C, tibia and metatarsus II, prolateral view. Scale line = 1mm.

DESCRIPTION. Holotype ♂ QMS18825. Carapace 5.31mm long, 5.13 wide. Abdomen 5.63 long, 4.50 wide. Total length, 15.

Colour in Alcohol. Carapace and chelicerae dark red-brown, legs brown with three wide green-brown bands on prolateral and dorsal femora. Abdomen (Fig. 1E) dorsally brown with many fine pallid areas uniformly, a few enlarged areas anteriorly and two pairs of fine diagonal pallid lines in posterior half; laterally brown, ventrally pallid in centre and anteriorly, mottled brown near spinnerets; sternum, maxillae and labium orange-brown; leg coxae concolorous with legs; fangs dark red-brown.

Carapace. Pilosity: with few short fine brown hairs along margins; numerous small pallid pits indicate possible origins of hairs; anterior and second striae deep distinct, others shallow, wide; 8-10 small setal bases anteromedially; 4 long thin bristles and few finer between PME, and 3-4 long thin between ALE; one large setal base scar between AME; few fine hairs on lateral margins. Fovea broad, deeply procurved to U-shaped; no foveal bristles. Caput short, strongly arched (Fig. 1C). Edges of carapace upturned to form distinct ridge and trough, most distinct posteriorly. Clypeus absent.

Eyes (Fig. 1B). Tubercle low, gradually defined. Group occupies 0.32 of head-width. Back row recurved; front row straight. Group front width, back width, length, 52:55:23. MOQ front width, back width, length, 28:37:19. AME:ALE:PME:PLE, 12:14:7:10. AME-AME, 0.4, AME-ALE, 0.1, PME-PLE, 0.3, PME-PME, 2.1, ALE-PLE 0.4.

Chelicerae. Large, strong, rounded, few short fine brown prostrate bristles prodorsally and in two lateral bands; anterior curve of chelicerae with many short strong bristles becoming weaker over fang edge. Rastellum absent. Fang smooth but for midbasal triangular tooth. Furrow promargin with 3 separated basal teeth, otherwise promargin smooth, glabrous; retromargin with 1 small and 8 large strong teeth, basomesally with 3 small teeth. Intercheliceral tumescence absent.

Labium. 1.30mm wide, 0.79 long (Fig. 1G). Labio-sternal suture a wide continuous groove. With ca. 100 fine pointed cuspules on anterior edge.

Maxillae. 2.18mm long in front, 2.06 long behind, 1.21 wide; with ca. 70 fine pointed cuspules in triangle extending for three-quarters of length. Heel rounded, unmodified; anterior lobe large conical, lower surface convex, forming broad incrassate region subapically. Serrula broad, distinct, extending from anterior face of lobe to just behind it.

Sternum. 3.24mm long, 2.67 wide (Fig. 1G). Sigilla position, size, shape, and distance from margin: posterior, 0.67, oval, 0.36; middle, 0.33, oval, 0.33; anterior, 0.21, tear-shaped, 0.21. Sternal margin with fine hairs, rest with long fine bristles.

Legs. Legs I, II without apparent modifications (Fig. 2B,C). Tarsi III, IV noticeably ballooned or incrassate for their length; scopulate areas pallid. See Table 1 for measurements.

Scopula. Short erect hair (not obscuring cuticle) on ventral surface of tarsi II (thin), III, IV, small area of scopulate hairs distal on metatarsi IV;

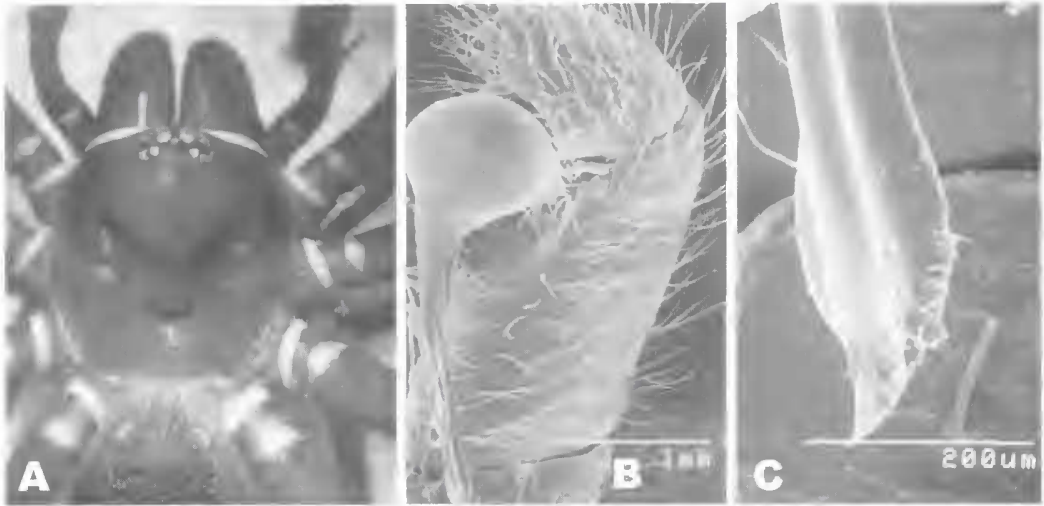


FIG. 3. *Hadronyche anzses* sp. nov., ♂. A, carapace, eyes, chelicerae; B, palpal tibia, cymbium, and bulb, proventral view; C, embolus, proventral view.

absent elsewhere. No preening combs or modified spines evident on legs.

Spines. All femora aspinose. Leg 1, pa 0, ti v4, me v10, ta v4; leg 2, pa 0, ti v4, me v7, ta v6; leg 3, pa p12, ti p3, v3, me p2, r1, v7, ta p1, r1, v8; leg 4, pa p3-7 thornlike, ti p0-1, v3, me v3, ta p1, v2+4; palp, 0.

Claws. Leg I: 7 teeth increasing gradually in length from the base to third tooth then gradually decreasing and crossing to inner face of claw distally on paired claws, 2 small thin teeth on unpaired claw; leg IV similar but unpaired claw bare.

Trichobothria. In two rows, each of 4 for just over half of tibiae, rows are straight and lack prolateral curve of small trichobothria proximally; ca. 7 on metatarsi for distal two-thirds in slightly irregular line; ca. 6 filiform on tarsi in irregular line. Tarsal organ small, distal, distinctly raised.

Palp (Figs 2A, 3B,C). Patella and tibia incrassate; femora dark red brown. Bulb small,

pyriform; embolus long, tapering gradually to flared tip, keel begins one-sixth of length from origin; tip grooved for distal one-sixth; cymbium short, aspinose.

Abdomen (Fig. 1E, F). Posterior booklungs large, slits as wide as those of anterior pair; covers yellow brown, hirsute.

Spinnerets (Fig. 1D). PMS 0.82mm long, 0.30 wide, 0.36 apart, about 0.46 of basal PLS in diameter; spigots on pallid area ventrally in distal third. PLS length of basal, middle, apical, and total articles 1.73, 0.45, 0.61, 2.79, respectively; spigots ventrally in pallid area in distal third of basal article, and full length of others.

RELATIONSHIPS. The generic affinities of this new species generate a profound dilemma. The species has many autapomorphies making it distinct from both *Atrax* and *Hadronyche*. However, the elevation of this species to genus would leave both *Atrax* and *Hadronyche* defined only by plesiomorphic characters and is hence cladistically indefensible. Equally, however, the continued separation of *Atrax* and *Hadronyche* lacks any support.

Hadronyche anzses presents a unique combination of characters in the genus in which it most closely resembles Gray's (1987) *Hadronyche* 'species 19'. Those characters are the reduced length and dentition of the row of teeth on the cheliceral promargin and the short almost dome-shaped apical segment of the posterior

TABLE 1. Leg measurements (mm) of *Hadronyche anzses* sp. nov., holotype ♂.

	I	II	III	IV	Palp
Femur	4.19	3.88	3.63	4.25	2.88
Patella	2.25	2.25	2.06	2.31	1.69
Tibia	2.69	2.38	2.06	2.81	2.25
Metatarsus	2.75	2.50	2.50	3.31	
Tarsus	1.56	1.56	1.69	2.13	1.19
Total	13.44	12.57	11.94	14.81	8.01

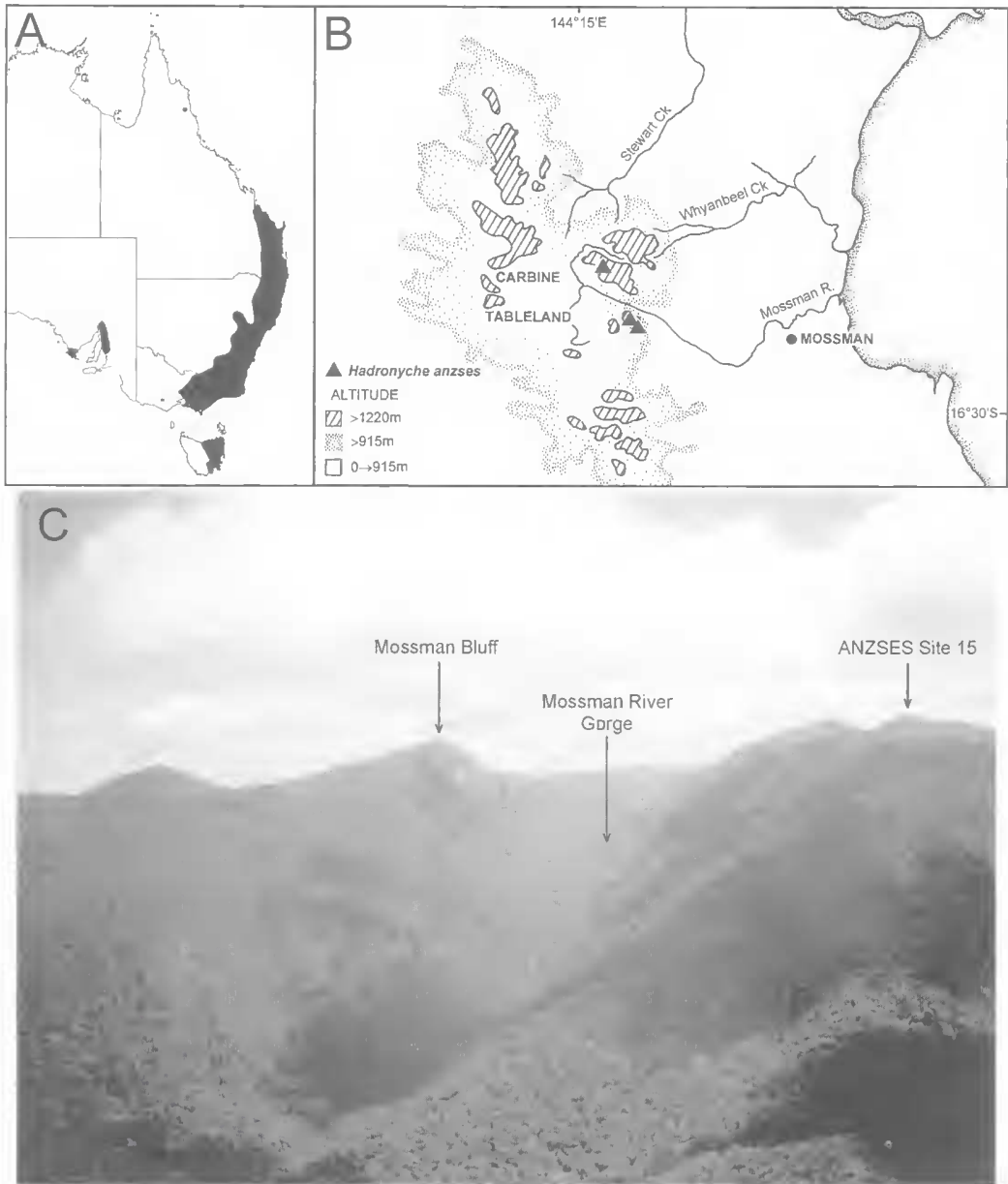


FIG. 4. A, occurrence of *Hadronyche* in Australia; B, *Hadronyche anzsles* sp. nov. records. C, aerial view from the east towards the ranges west of Mossman, showing the two collection localities for *Hadronyche anzsles*, separated by the deep Mossman River Gorge. (Photograph by Juliana Russell)

lateral spinnerets. Because all mygalomorphs have the promarginal row (Raven, 1985), the reduction is most parsimoniously considered an autapomorphy of the species pair. Like most

species included by Gray (1987) in *Hadronyche*, the caput of *Hadronyche anzsles* is arched. The short spinnerets are also, by outgroup comparison, apomorphic. Hence, *Hadronyche anzsles*

plus 'species 19' are well defined but the balance of the taxa await Gray's revision for a synapomorphy.

DISTRIBUTION AND HABITAT. *Hadronyche anzses* is known from two adjacent mountain massifs on the coastal rim of the extensive Carbine Tableland which lies immediately to the west of Mossman (Fig. 4). The two sites are only 5km apart but are separated by the deep gorge of the Mossman River which plunges almost to sealevel. Both sites reach the highest altitudes on the whole Tableland and, although rainfall records are not available, it would be expected that their high, easterly exposure would attract rainfall maxima for the Tableland also. The habitat at both sites is high-altitude rainforest classified by Tracey & Webb (1975) as simple microphyll vine-fern thicket. This vegetation type is very limited in extent in the Wet Tropics, being restricted to wet, cloud-prone, windswept top slopes of granitic highlands. The failure to collect this spider during extensive pitfall trapping by the Queensland Museum at more accessible, though lower and drier, parts of the Carbine Tableland (Mt Lewis road, Mt Spurgeon area), indicates that it is probably restricted to the high, wet, eastern rim.

The Carbine Tableland is known to be one of the major centres of invertebrate diversity and endemism in the Wet Tropics region (Monteith, 1995) and the discovery of this interesting, disjunct spider accords with this pattern.

ACKNOWLEDGEMENTS

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